

Title	Cover & Contents
Author(s)	
Citation	数理解析研究所講究録別冊 = RIMS Kokyuroku Bessatsu (2010), B21
Issue Date	2010-12
URL	http://hdl.handle.net/2433/177033
Right	
Type	Others
Textversion	publisher

RIMS Kôkyûroku Bessatsu B21

**Applications of Renormalization Group Methods
in Mathematical Sciences**

edited by Keiichi R. Ito and Tadahiro Miyao

December, 2010

Research Institute for Mathematical Sciences

Kyoto University

RIMS Kôkyûroku Bessatsu B21

*Applications of Renormalization Group Methods
in Mathematical Sciences*

September 9~11, 2009

edited by Keiichi R. Ito and Tadahiro Miyao

December, 2010

Research Institute for Mathematical Sciences

Kyoto University, Kyoto, Japan

The papers presented in this volume of RIMS Kôkyûroku Bessatsu are in final form and refereed.
©2010 by the Research Institute for Mathematical Sciences, Kyoto University. All rights reserved.
Printed in Japan.

Preface

The symposium on applications of renormalization group methods in mathematical sciences was held at the Research Institute for Mathematical Sciences of Kyoto University from September 09, 2009 through September 11, 2009. This symposium was organized to discuss recent progresses and problems in mathematical physics in which renormalization group methods are used practically or conceptually.

Though it was hot and humid in Kyoto while the symposium, we had more than 16 talks and 40 participants who were very keen to join the discussions. The contents of the talks were very wide and some of them may not be directly related to the renormalization group methods, but we believe that these lectures will help the reader to discover interesting problems in sciences and/or find ideas to solve his or her problem(s).

Though talks were all interesting and exciting, it is very regretful that we could not persuade some speakers to contribute their talks to this proceedings. All manuscripts in this book were carefully reviewed by anonymous referees chosen by the organizers.

We would like to thank not only speakers but also all participants who joined the exciting discussions in the seminar. Finally we would like to express our sincere thanks to the Res. Inst. Math. Sci. for generous supports including financial ones. This symposium was partially supported by the Grant-in-Aid for Scientific Research (C), No.20540221, the Ministry of Education, Science and Culture, Japanese Government.

September 2010, Kyoto/Osaka

organizer	K.R.Ito (ito@mpg.setsunan.ac.jp)
co-organizer	T.Miyao (miyao@mpg.setsunan.ac.jp)

Institute for Fundamental Sciences
Setsunan University
Neyagawa, Osaka 572-8508
Japan

Contents

Preface

Contents

On the existence of ground states for the Pauli-Fierz model with a variable mass	1
T.Hidaka	
Existence and absence of ground states for a particle interacting through the quantized scalar field on a static spacetime	15
C. Gérard, F.Hiroshima, A.Panati and A.Suzuki	
On the ionization energy of semi-relativistic Pauli-Fierz model for a single particle	25
F.Hiroshima and I.Sasaki	
Time reversal symmetries and properties of ground states in nonrelativistic QED	35
M.Loss, T.Miyao and H.Spohn	
Large Deviations in Quantum Spin Chains	45
Y.Ogata	
Large-time asymptotics of the gyration radius for long-range statistical-mechanical models	53
A.Sakai	
Charge Transport in Random Media and Boltzmann Limits for Single Particle and Manybody Models	63
T.Chen	
Linear stability of the incoherent solution and the transition formula for the Kuramoto-Daido model	109
H.Chiba	
Mathematical analysis to coupled oscillators system with a conservation law	129
T.Miyaji, I.Ohnishi, R.Kobayashi and A.Takamatsu	
Sales ranks, Burgers-like equations, and least-recently-used caching	149
K.Hattori and T.Hattori	
Boson Gas Mean Field Model Trapped by Weak Harmonic Potentials in Mesoscopic Scaling	163
H.Tamura	
Some abstract considerations on the homogenization problem of infinite dimensional diffusions	183
S.Albeverio and M.W.Yoshida	